

COMPREHENSIVE AIRPORT MASTER PLAN 1997-2016

TECHNICAL REPORT

Connett Fleming

ENGINEERS AND PLANNERS

Nicholas J. Pela & Associates

Aviation Planners



the Southwest Aviation Services Group

The preparation of this document was financed in part through a grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official view or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.



COMPREHENSIVE AIRPORT MASTER PLAN 1997-2016

EXECUTIVE SUMMARY

Gannett Fleming ENGINEERS AND PLANNERS

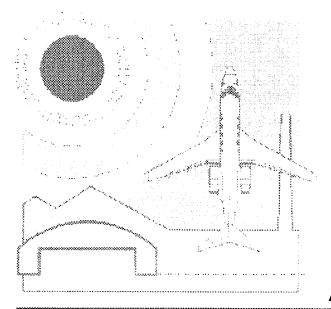
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BISBEE-DOUGLAS INTERNATIONAL AIRPORT

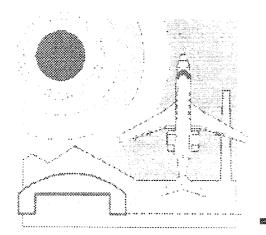
Douglas / Cochise County, Arizona

AIRPORT MASTER PLAN - 1997

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BISBEE-DOUGLAS INTERNATIONAL AIRPORT Douglas / Cochise County, Arizona

AIRPORT MASTER PLAN - 1997

EXECUTIVE SUMMARY

INTRODUCTION

The joint-venture firms of Gannett Fleming, Inc. and Nicholas J. Pela & Associates were retained by Cochise County to prepare a comprehensive Airport Master Plan Study for the Bisbee-Douglas International Airport (BDI). This document is a summary of the completed Master Plan study.

In the study, analysis was made of the factors affecting the future development of the BDI airport, and recommendations were presented which, when implemented, will assure that the airport will develop consistent with the demand placed upon it.

The study focused on three main points:

- To provide recommendations for cost-effective repair and rehabilitation of the existing airport to assure a safe operating environment, and provide an attractive location for new business development.
- To provide realistic recommendations for future airport improvement which will assure that the airport will accommodate its future demand, in terms of aviation safety and capacity as well as commercial growth.
- To identify a unique role for BDI within the Cochise County airport system, and to provide assistance to the County in promoting that role.

The twenty-year planning period of the Study covers calendar years 1997 through 2016.

Project Approach - the PAC Process

The master planning process utilized the "Planning Advisory Committee" (or PAC) team approach. PAC team members are persons who are interested in the outcome of the airport planning process, and who are willing and able to commit the time and resources necessary to provide timely review of all information submitted by the Consultant.

Review of the Master Plan documents was undertaken on an ongoing basis during the project term. Each PAC member began with an empty notebook (the PAC Workbook). As each phase of the Plan was completed by the Consultant, Working Papers are prepared and copies were distributed to each PAC member for review. PAC meetings were scheduled at key points in the process in order to discuss and ultimately approve each planning element Working Paper, as submitted by the Consultant.

As each progressive element of the planning document was completed by the consultant team and approved by the PAC, it became a part of the PAC Workbook. When all elements of the work were completed, the PAC Workbook was approved and became the final Master Plan.

Public Involvement

Several Public Information Meetings were also convened during the course of the planning project. At these meetings, the public was kept informed as to the progress, findings and recommendations of the studies, and input and comments by the public were solicited.

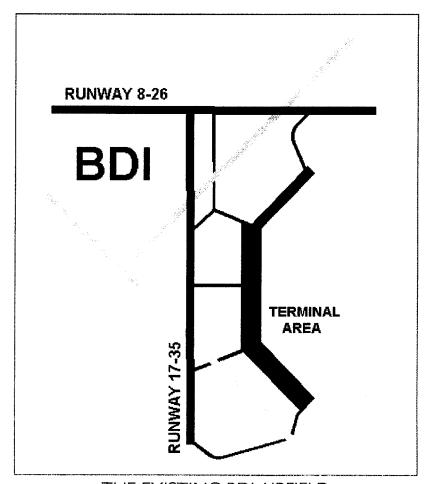
Inventory of Existing Conditions

An extensive inventory of the airport's infrastructure, and of available airport records was undertaken as a part of the Master Plan. The investigations included research of available record plans and documents as well as field surveys.

A visual engineering investigation of the airport's pavements was conducted by ATL, Inc. as part of the study. Their recommendation was that all airside pavements be reconstructed, with the exception of a portion of Runway 17-35.

Each of the various airport facilities was assigned a general condition rating of "Good", "Fair", or "Poor". A facility rated as "Good" may be assumed to be substantially adequate throughout the 20-year time frame of this study, assuming only normal maintenance. A rating of "Fair" means that the item will probably require major upgrade or

replacement at some time during the planning period, but is at least serviceable at the present time. A rating of "Poor" indicates that the item is not adequate for its intended use at the present time.



THE EXISTING BDI AIRFIELD

The following page contains a summary tabulation of the various airport facilities, along with the general condition rating that was assigned to each.

BISBEE-DOUGLAS INTERNATIONAL AIRPORT SUMMARY OF GENERAL FACILITY CONDITIONS OCTOBER, 1996

Runway 17-35 Fair to Poor
Runway 8-26 Poor
Bituminous Taxiways Poor
PCC Apron Fair
Airport/Prison Access Road
Landside Pavements Poor
Building #1 (Terminal Building)Fair
Building #2 (Cannery/Warehouse) Poor
Hangar #1 (Steel Frame)Fair
Hangar #2 (Steel Frame)Fair
Hangar #3 (Steel Frame)Fair
Hangar #4 (Wood Frame) Good
Building #3 (Unoccupied Wood Frame) Poor
Drainage - Surface and Storm Drains
Runway 17-35 Edge Lighting (MIRL) Poor
Runway 17 VASI-2 Fair
Runway 35 VASI-2 Fair
Lighted Wind ConeFair
Rotating Beacon (on Hangar #4) Good
VORTAC Transmitter Station (FAA-owned) Good
Water System - Occupied Areas Good
Water System - Abandoned Areas Poor
Sanitary Sewer System - Original Collection System Fair
Sanitary Sewer System - New Septic tank Good
Airport FencingFair

Airport Revenues and Expenditures - FY 94-95 and FY 95-96 The Cochise County Department of Facilities & Solid Waste Management reported that total revenues and expenditures for FY 94-95 and FY 95-96 were as follows:

	<u>Kevenue</u>	Expenditure
FY 1994-1995	\$ 394,417	\$ 233,774
FY 1995-1996	\$ 458,501	\$ 303,062

WIND DATA ANALYSIS

A detailed analysis of record wind data collected at BDI for the period between 1986 and 1996 was undertaken as part of the study. The source of the data was the National Climatic Data Center at Asheville, NC. The work included 16-knot and 10.5-knot all-weather analysis of total annual data, data for the peak month (June), and a "high wind" analysis which considered only winds of over 16 knots. It was found that, in all cases, Runway 3-21 provides the best coverage of the four existing runway alignments.

FORECASTS OF AVIATION ACTIVITY 1997-2016

Because of its location, unobstructed airspace, compatible adjacent land uses, and easily developed site, the BDI Airport is well-suited to assume a role as the major business aviation facility in Cochise County. However, because of the present condition of the airfield and its infrastructure, the current level of activity was found to be quite low.

It is estimated that there are currently only about 3,300 operations (landings and takeoffs) per year. It is believed that activity will increase after initial airport improvements are made.

There are currently 24 light aircraft based at BDI. The Consultant's research indicates that this level has been fairly stable over at least the past 13 years, even though the condition of the airport has deteriorated.

With the recommended improvements, the airport will be made more attractive to business users, and may also experience increased use as a pilot training center.

Cochise County will be aggressively marketing the airport to prospective commercial and industrial users who may develop new manufacturing or transportation facilities on or near the airport property, or who may use the airport as their transit point when doing business within the area. The airport may also become the regional focus for *maquilladora* companies as NAFTA related commerce increases.

If all of this takes place, it is possible that the aeronautical activity at BDI could increase to as much as 26,000 annual operations within the next five years, and to about 46,000 annual operations by the year 2016.

The projected increase in activity through the project planning period (1997-2016) is as follows:

FORECAST OF AVIATION ACTIVITY 1997-2016

Current 1997 Estimate	After Initial Improvement	Ultimate 2016 Estimate
Based Aircraft 24	24-30	63
Total Annual Operations 3,300	26,000	46,000

It is important to realize that the projected activity as presented above reflects the Consultant's opinion of a *maximum potential* level of activity that may occur at BDI only if the following factors become a reality:

- 1. The airport runways, taxiways, aprons, buildings, and related infrastructure are rehabilitated and/or upgraded according to the recommended improvement plan.
- 2. New aviation-related commercial and industrial users are attracted to the airport by an aggressive marketing effort.
- 3. The general economy in the county improves as a result of increased NAFTA related commerce.

There are no existing capacity constraints at the BDI Airport, nor are there any forecast conditions that could result in a capacity constraint.

EXISTING AIRPORT
STANDARDS COMPLIANCE

A comparative review of the existing airport layout and applicable FAA setback, dimensional, and land use criteria was undertaken. The results indicate that, if the County decides not to pursue the recommended airport improvements and to maintain the airport in its present configuration, some additional land acquisitions will be necessary for control of the approach surfaces to Runways 35, 8 and 26. Acquisition of a 3.4 acre avigation easement would be necessary

for Runway 35. A 15.6 acre avigation easement would be necessary for Runway 26, and 23.9 acres would need to be acquired in fee or long-term lease interest for the Runway 8 approach.

Alternately, the thresholds of the affected runways could be relocated. However, the decreased runway lengths may limit the types of aircraft that could safely use the airport.

There is no current airport zoning ordinance in place. It has been recommended that an ordinance be enacted which would provide height limitation and land use zoning protection of the FAR Part 77 airport surfaces.

RECOMMENDED "NICHE" MARKETS

The following is a list of some specific "niche" markets that the BDI Airport could serve. Most of the service roles suggested are best provided by private enterprise.

Significant improvements to the present airport infrastructure are needed to effectively serve any of these suggested markets. The focus of the County should be to provide an adequate airport facility to serve any of these markets, and then to provide an aggressive marketing effort to attract new business to provide the suggested services.

The specific niche market areas as presented below may be considered unique parts of an aggregate market base for the BDI Airport. Although each niche market area will have its own specific improvement needs, there is sufficient overlap between the areas that a broad-based marketing effort can be undertaken.

 Regional Business Aviation Center, serving business jets and turboprops, with full precision instrument approach capabilities, and with service and accommodations for arriving pilots and passengers.

Requirements:

Precision Instrument Approach.

Runways able to accommodate business jets.

Pilot Lounge and briefing room. Passenger Lounge/waiting area.

Short-term hangar space.

Coffee Shop.

Repair services and jet fuel.

 <u>Auxiliary General Aviation/Military Training Center</u>, providing a nearby instrument training site to Cochise College students, Air Force and the Air National Guard.

Requirements:

Precision Instrument Approach.

Runway able to accommodate military

trainers.

Pilot Lounge and briefing room.

Auxiliary classrooms.

Coffee Shop. let fuel availability.

Historic Site and Southeastern Arizona Sport Aviation Center, providing a focal point for tourism activities and a staging site for sport aviation events, such as the Copperstate Fly-in, locallysponsored air shows, or Experimental Aircraft Association functions.

Requirements:

Restoration of existing buildings.

Aviation Museum and/or Interpretive

Center.

A large transient tiedown apron(s).

Coffee Shop.

Large auto parking area(s).

Air show staging area ("historic site" ramp).

Cochise County Airport Industrial Park, providing improved development sites for new industry and an interface between commercial truck and air freight transit. The BDI Airport site is strategically placed to serve as a warehousing, manufacturing, or corporate base for emerging or expanding Maquilladora companies - those who engage in international trade with facilities on both sides of the Mexico/U.S. border.

Requirements:

Planned Industrial Park.

Improved utilities service infrastructure. Improved vehicular access to industrial sites.

There does not appear to be any apparent significant conflict between the recommended uses. With careful planning, the BDI Airport could serve several specific markets and enjoy a broad base of airport revenue.

RECOMMENDED AIRPORT IMPROVEMENTS

As was mentioned above, improvements to the existing airport will be needed to effectively serve any of the recommended niche markets. A phased approach has been presented which will address the Immediate Term needs (improvements required to provide a safe operating environment to serve the potential present demand), the Short-Term needs (improvements which may be required to meet the projected demands prior to the year 2005), and the Ultimate Term needs (improvements which may be required before the end of the current 20-year planning period).

The recommended major airport improvements include the following:

IMMEDIATE TERM (1997-1999) IMPROVEMENTS

- Reconstruct 7,300' x 100' Primary Runway.
- Reconstruct Primary Access Taxiways.
- Reconstruct Primary Runway & Taxiway Lighting.

SHORT-TERM (2000-2005) IMPROVEMENTS

- Reconstruct 5,850' x 100' Crosswind Runway.
- Reconstruct Secondary Access Taxiways.
- Reconstruct Secondary Runway & Taxiway Lighting.
- Install MALSR Approach Lighting on Primary Approach.
- Rehabilitate Lighted Wind Cone & Segmented Circle.
- Install PAPI on all Runways.
- Reconstruct Aircraft Apron and PCC Taxiway.
- Construct New Passenger Loading/Service Apron.
- Renovate Terminal Building (Historic Preservation).
- Renovate Existing Hangars (Historic Preservation).
- Reconstruct Terminal Auto Parking Area.

ULTIMATE-TERM (2006-2016) IMPROVEMENTS

- Upgrade Primary runway for 60,000 pound aircraft.
- Extend Primary runway to 8,700' x 100' (1,400' extension).
- Prepare Environmental Assessment for proposed Primary runway extension and precision approach.
- Upgrade MIRL to High Intensity Runway Lighting (HIRL) on Primary runway.
- Provide precision instrument approach to Primary runway (ILS, DGPS or TLS).
- Upgrade Crosswind runway to accommodate 60,000 pound aircraft.
- Extend Crosswind runway to 7,000' x 100' (1,150' extension).
- Prepare Environmental Assessment for proposed Crosswind runway extension.
- Provide straight-in nonprecision instrument approach to Crosswind runway (VOR or GPS).
- Strengthen all taxiways which will be used by larger aircraft to accommodate 60,000 pound design strength.
- Construct full parallel taxiway access to Primary runway (35' minimum pavement width).
- Install Medium Intensity Taxiway Lighting (MITL) on new parallel taxiway.
- Expand light aircraft parking apron (12,500 pound SWG design strength), to accommodate a total of 44 aircraft tiedown positions (18 additional aircraft).
- Expand the Terminal Building automobile parking area to accommodate a minimum total of 52 cars (23 additional cars).
- Install apron and parking area floodlighting.
- Modify Terminal Building to accommodate scheduled airline service.
- Provide interior tenant improvements as required for renovated Hangars #1, #2 and #3.
- Provide interior tenant improvements as required for renovated Hangar #4.
- Provide interior tenant improvements as required for renovated Building #2.
- Construct a paved and lighted Helipad with 48' x 48'
 Touchdown & Lift-off Area (TLOF), and 86' x 110' Final
 Approach and Takeoff Area (FATO), with adjacent short-term rotorcraft parking area.

DEVELOPMENT ALTERNATIVES

Six (6) alternatives for the future improvement of the airport were developed.

The six alternatives were developed such that each would accommodate a 8,700' long paved Primary runway and a 7,000' long Crosswind runway (ultimate lengths), which will be capable of serving ARC C-II aircraft. Each option will also accommodate a precision approach on the Primary runway (with MALSR installation), and a straight-in nonprecision instrument approach for the Crosswind runway, with Runway Protection Zones and airport Part 77 approach protection in accordance with FAA requirements.

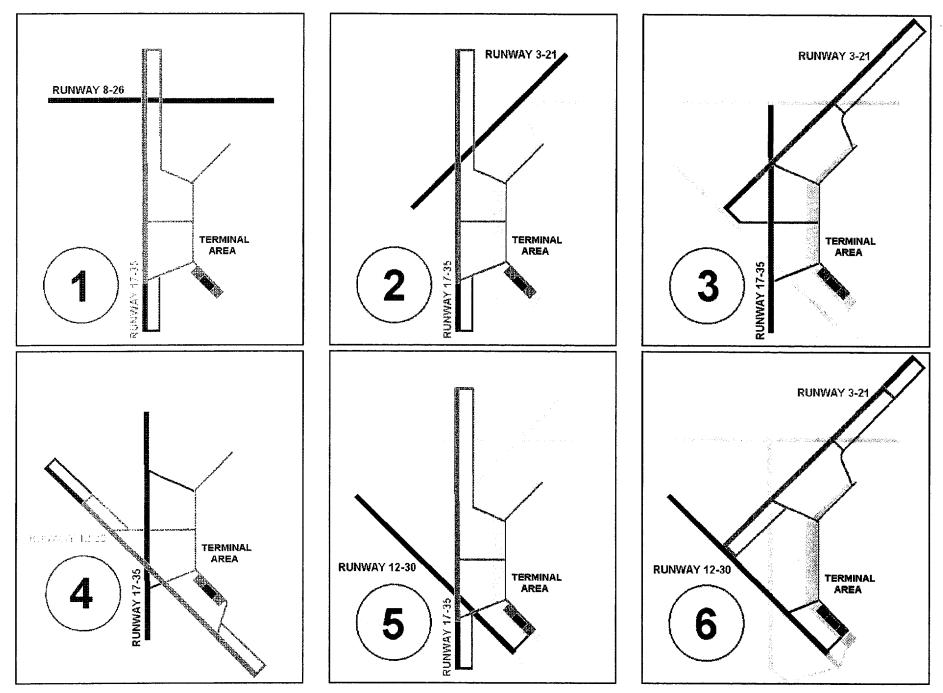
The options were developed with the intent of utilizing existing airport land and usable pavement to the greatest extent possible, avoiding obvious significant environmental impacts, and minimizing construction and land acquisition costs. The basic runway alignment and development criteria is as follows:

- Maximize the use of in-place pavement and base materials by development along the alignments of currently active and previous Douglas Army Airfield runways as much as possible.
- Avoid disruption of the existing airport terminal area, as well as potential terminal area expansion areas.
- Minimize environmental impacts to adjacent lands.
- Avoid any known obstructions to air navigation, including vehicular clearances over Highway 191.

The six development alternatives are illustrated on the following page.

Each alternative was evaluated by the consultant team and the PAC in terms of relative wind coverage of the Primary and Crosswind runways, secondary instrument approach feasibility, potential airspace issues (obstructions to air navigation), and cost of construction for the initial and ultimate improvements.

The Bisbee-Douglas International Airport Planning Advisory Committee (PAC) selected Alternative #3 as the basis for future development and improvement of the airport.



BISBEE-DOUGLAS INTERNATIONAL AIRPORT DEVELOPMENT ALTERNATIVES RED=PRIMARY DEVELOPMENT / BLUE = SECONDARY (ULTIMATE) DEVELOPMENT

ENVIRONMENTAL FACTORS

FAA Order 5050.4 requires that several specific areas of possible environmental impact be addressed when considering use of public funding on an airport development project. The BDI Airport Master Plan included investigation of each of these specific areas in order to provide a basis for future preparation of formal Environmental Assessments of the recommended development program.

In order to identify possible areas of environmental impact, a number of public jurisdictional agencies were contacted, provided with review materials, and asked to provide an initial scoping review. These agencies will be responsible for review of the Environmental Assessment documents for major recommended development.

The results of the analyses indicates that all of the projects proposed for Bisbee-Douglas International Airport are categorically excluded from requiring the preparation of an Environmental Assessment with the exception of the reconstruction of Runway 3-21 and possibly Runway 17-35.

Plans and specifications for all construction projects should address the potential impacts upon Cultural and Historic Resources, Air Quality, Water Quality, and short term Construction Impacts.

In addition, prior to renovating or demolishing any currently unoccupied building a biological assessment should be performed to determine:

- 1. The type of wildlife affected;
- 2. The affects of the proposed construction on the wildlife and any necessary mitigation effort;
- 3. Whether any of the wildlife is an endangered or threatened species;

All results should be forwarded to the U.S. Fish and Wildlife Department and the Arizona Game and Fish Department for consultation.

Prior to any building renovation or demolition, hazardous materials should be identified within the buildings and an abatement program initiated.

It is also recommended that Cochise County enact airport-related ordinances to control the use of land surrounding the airport.

RECOMMENDED
DEVELOPMENT PLAN AND
AIRPORT LAYOUT PLAN
(ALP)

The Airport Layout Plan (ALP) is a set of scaled drawings that depict the existing and ultimate proposed airport land and facilities. An FAA-approved ALP is necessary in order for the airport to be eligible for Federal or State grants.

The Bisbee-Douglas International Airport ALP was prepared based on Development Alternative #3, which was selected by the BDI Planning Advisory Committee (PAC) by majority vote. The layout of the various airport facilities was refined in the ALP preparation process in order to address comments from the PAC and ADOT Division of Aeronautics, and to optimize the utility and constructibility of the improvements in a phased approach, as follows:

• Phase 1: <u>Immediate Term (1997-1999)</u>

The major improvements which are recommended in the Immediate Term include closure of Runway 8-26, reconstruction of Runway 3-21 as the new primary runway, reconstruction of Taxiways T-4 and T-5, and installation of Medium Intensity Runway and Taxiway Lighting (MIRL and MITL) on the reconstructed runways and taxiways. The Phase 1 threshold of Runway 3 was located such that airport closure during construction will be minimized (Runway 17-35 may remain in use during most of the construction period).

It will be necessary to acquire an 87.48 acre parcel of State-owned land prior to the initial construction of Runway 3-21.

• Phase 2: Short-Term (2000-2005)

The major improvements recommended in the Short-Term schedule include reconstruction of Runway 17-35 to serve as the secondary or crosswind runway, reconstruction of existing Taxiways T-2 and T-3, rehabilitation of the entire 75' wide PCC taxiway/apron area, apron and auto parking area reconstruction, installation of MIRL and MITL on the reconstructed areas, rehabilitation of the existing lighted wind cone/segmented circle, and installation of Precision Approach path Indicators (PAPI) on all runway ends. The initial phase of development for Runway 17-35 includes relocation of the Runway 17 threshold 420' to the north to avoid additional ultimate land/easement acquisitions for the Runway 35 approach.

• Phase 3: <u>Ultimate Term (2006-2016)</u>

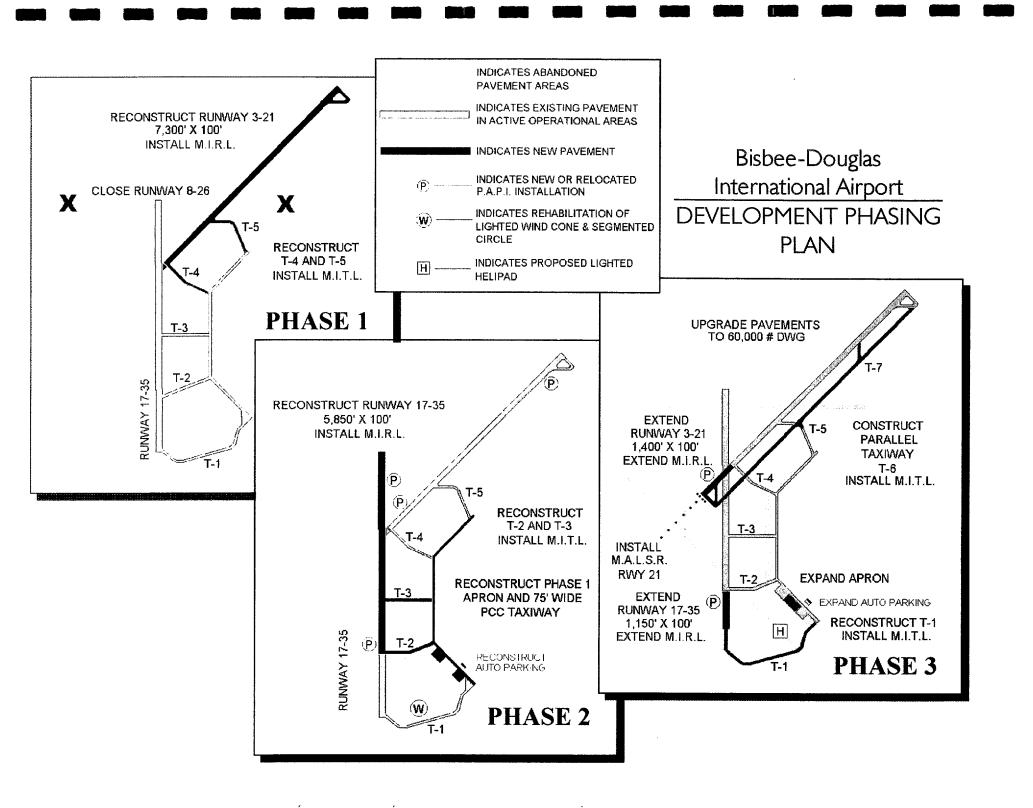
Phase 3 (Ultimate-Term) major improvement recommendations include upgrading airport pavements to accommodate 60,000 pound aircraft, extension of both runways to serve larger aircraft, construction of a full MITL-lighted parallel taxiway (Taxiway T-6) for Runway 3-21, a new lighted helipad, reconstruction of Taxiway T-1 (with MITL installation), construction of a new cross-taxiway (Taxiway T-7), relocation of the Runway 3 and 35 PAPI's, a MALSR on the Rwy 3 approach, and expansion of the aircraft apron and auto parking area.

If scheduled airline service becomes a reality at BDI, it will also be necessary to modify the Terminal Building to comply with security requirements, and to provide passenger accommodations and baggage handling services.

These three general development phases may be further broken down into several projects, as dictated by the actual future demand and the future availability of funding.

A reduced copy of the Airport Layout Drawing sheet is included at the end of this Executive Summary.

The three phases are illustrated on the following page. Note that the phasing sketches reflect only the major recommended improvements, and exclude renovation of buildings.



DEVELOPMENT COSTS

The estimated costs for the recommended development are listed below. These are based upon construction of all of the improvements listed on pages E-9 and E-10, in conformance with the Airport Layout Plan configuration, and the construction phasing illustrated on page E-16. The budget costs for building renovation are shown separately from the airside and landside infrastructure improvements.

Immediate Term Improvement Costs (1997-1999):

These are improvements needed at the present time to bring the airport into compliance with FAA and/or state requirements, to upgrade or repair deteriorated systems, or to eliminate potential hazards. All recommended improvements are eligible for FAA funding, through the Airport Improvement Program (AIP), and are eligible for State matching funds, through ADOT.

Airside and Landside Infrastructure:

Total Costs	FAA Share	State Share	Local Share
\$ 2,715,700	\$ 2,472,916	\$ 121,392	\$ 121,392

Short-Term Improvement Costs (2000-2005):

These are improvements needed to allow the airport to better accommodate the present and projected 5- to 10-year demand. All recommended airside and landside improvements are eligible for FAA funding, through the Airport Improvement Program (AIP), and are eligible for State matching funds, through ADOT. The renovation of historic buildings may be fundable through Historic Preservation grants, for those buildings which are eligible (Terminal and Hangars).

Airside and Landside Infrastructure:

- 10 out on a contactor in processing.					
<u>Total Costs</u> \$ 3,029,060	FAA Share \$ 2,758,262	<u>State Share</u> \$ 135,399	<u>Local Share</u> \$ 135,399		
Building Renovations:					
<u>Total Costs</u> \$ 1,333,680			<u>Local Share</u> \$ 851,160		

<u>Ultimate-Term Improvement Costs (2006-2016)</u>:

These are improvements which will be needed to accommodate the projected 20-year demand. All recommended improvements are eligible for FAA funding, through the Airport Improvement Program (AIP), and are eligible for State matching funds, through ADOT.

Airside and Landside Infrastructure:

Total Costs	FAA Share	State Share	Local Share
\$ 3,754,760	\$ 3,419,088	\$ 167,836	\$ 167,836

